Status of Conductor Procurement

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Open issues

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- Need to avoid mech. unstable cables:
  - Look for smoking guns
  - Change procurement strategy
  - Change specs. and improve QC
- Ramp rate sensitivity
  - Measure Interstrand Contact Resistance of LHC-IR cables
  - Explore advantages and feasibility of SnAg coating

The problem

- 50 % of the inner cable made with **OST strand** couldn't be used because mechanically unstable
- This problem caused a shortage of inner cable
- In the attempt to solve this problem cables were made with the **unfavorable lay direction** (because of strand availability)
- 50% coil rejection

The smoking gun

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- We tried to understand the causes of the cabling problem with OST strand
- The **springback** value is very close to the maximum limit of the specs
- While SSC-IGC strand had significantly lower values

Defendant acquitted

- Alstom strand successfully used for inner cable had a similar high springback
- We have to change strategy

New procurement strategy - 1

- We are going to **procure the cable**
- Specs will require mechanical stability of the cable (we are working on the detail of the test and the acceptance criteria)
- We are going to carefully select the recipient of the Request For Proposal
- Selection will be base on technical evaluation of the proposal (that should include a good record of similar successful cables)

New procurement strategy - 2

- Cable will be procured in two phases:
- 1st phase: short production to test the cable and wind a coil (< 5 months from signature of contract)
  - this will be a GO/NO_GO test

  - we are working on how to put this into the contract
- 2nd phase: all the rest

Specs and QC improvements

- We had a very useful meeting with Greg Kobliska (TD-QC group) on Oct 15.
- We are modifying the Specs and the QC plan in order to:
  - be consistent with the procurement strategy
  - update QC from SSC time (eddy current scan…)
  - reliable QC at contractor and at Fermilab

Ramp rate dependence

- We have prepared a sample for measuring the **Interstrand Contact Resistance** of LHC-IR coils, as built. (it's a short mechanical model of collared coils)
- The sample is in the cryostat ready to be tested
- Results will tell us if SnAg coating is an *interesting option or not*.
- CERN is available to collaborate with us
  - Set heat treatment time
- Several vendors have this technology

Next steps:

- Specs:
  - 1st new version by the end of next week
  - Final version within end of November
    - Including criteria for tech evaluation
- QC:
  - We are working on the budget for cable (BNL) and strand (FNAL) tests
  - Complete plan and budget by the end of November